IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| **Application Serial No:** | **09/996,658** | **Confirmation No.:** | **5256** |
| Date Filed: | November 29, 2001 | | |
| Application Title: | Methods And Compositions For Sorting And/Or Determining Organisms | | |
| Applicants: | Coull et al. | | |
| Group Art Unit: | 1634 | | |
| Examiner: | Bradley L. Sisson | | |
| Action Date: | July 27, 2004 | | |
| Action Type: | First Office Action On Merits – Non-FINAL | | |
| Certified Mail No: | 7003 3110 0000 5404 3926 | | |

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**Certificate of Mailing Pursuant to:**
**37 C.F.R. §1.8**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 6th day of January, 2005.

Brian D. Gildea
Reg. No. 39,995

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**Reply To Office Action**

Commissioner for Patents

Dear Sir or Madam:

A petition under 37 C.F.R. § 1.136(a) for an automatic three-month extension of time to reply to the present office action has been included with the papers accompanying this submission so please consider the following response to the Office Action mailed on July 27, 2004.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**Transmittal Cover Sheet**

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Commissioner for Patents

Enclosed herewith, please find the following documents and sheets.

1. Petition Under 37 C.F.R. § 1.136(a) for a three-month extension of time.
2. Response to the Office Action mailed on July 27, 2004.

Respectfully submitted
On behalf of Applicants,

Brian D. Gildea; Reg. No. 39,995

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Brian D. Gildea
Reg. No. 39,995

## Petition Under 37 C.F.R. § 1.136(a)

Commissioner for Patents

Dear Sir or Madam:

Applicants hereby petition under 37 C.F.R. § 1.136(a) for an automatic three-month extension of time to file a response to the Office Action mailed on July 27, 2004. With this extension, the due date for the response should be January 27, 2005. The Office is hereby authorized to deduct the fee set forth under 37 C.F.R. § 1.17(a)(1) for a three-month extension for a large entity, believed to be $ 1,020, from Deposit Account No. 02-3240.

Brian D. Gildea
Reg. No. 39,995

## I. ACTION SUMMARY

Claims 1-59 stand pending in the application. Claims 51-59 stand withdrawn from consideration by the Examiner. Claims 1-50 stand rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. Claims 1-50 also stand rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement. No claim stands allowed.

## II. FORMAL MATTERS

1. The Examiner is thanked for his return of the signed PTO-Form 1449 documents.
2. At paragraph 3 of the Office Action the Examiner objects to the specification, arguing that Applicant's have improperly attempted to incorporate by reference. Because the Examiner has not requested any corrective action, it is assumed that no amendments to the specification are needed to put the application in condition for allowance.

## III. RESPONSE TO THE OFFICE ACTION REJECTIONS

1. **Rejection under 35 U.S.C. § 112, written description requirement**

*(a) The Law*

There is a strong presumption that an adequate written description of the claimed invention is present when the application is filed." M.P.E.P. § 2163 (I)(A). The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description". M.P.E.P. § 2163.04 In rejecting a claim, the examiner must set forth express findings of fact which support the lack of written description conclusion..." M.P.E.P. § 2163.04(I).

"The analysis of whether the specification complies with the written description requirement calls for the examiner to compare the scope of the claim with the scope of the description to determine whether applicant has demonstrated possession of the claimed invention. Such a review is conducted from the standpoint of one of skill in the art at the time the application was filed...." M.P.E.P. § 2163(II)(A)(2) "Information which is well known in the art need not be described in detail in the specification." *Id.*

"To satisfy the written description requirement a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor has possession of the claimed invention." M.P.E.P. § 2163(I) An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. *Id.*

*(b) Analysis of The Examiner's Arguments In View Of The Law*

At paragraph 8 of the present Office Action, the Examiner argues that: "A review of the specification fails to find adequate written description of any molecular probe and binding partner that are to be used in the claimed invention." (OA at page 8) This asserted fact is not correct.

The term "molecular probe" is defined in the specification at page 7 as:

> *"...a nucleic acid or non-nucleic acid polymer (e.g. a DNA, RNA, PNA, nucleic acid analogs, nucleic acid mimics, chimera or linked polymer) having a probing nucleobase sequence that is designed to sequence specifically hybridize to a target sequence of a target molecule of an organism of interest."*

The term "binding partner" is also defined in the specification at page 10 as:

> *"...those molecules that bind to one or more other molecules in a specific manner. Because the binding partner interactions are specific, there is a degree of selectivity that is achieved depending on the nature of the binding partners chosen. Non-limiting examples of binding partner complexes (formed from the component binding partners) include antibody/antigen interactions, nucleic acid/nucleic acid interactions, enzyme/substrate interactions and receptor/ligand interactions. A non-limiting list of ligands includes avidin (and its analogs such as Streptavidin and Lumavidin™), lectins, carbohydrates, peptides and proteins. The preferred pair of binding partners used in the practice of this invention is the antibody/antigen."*

The terms "nucleic acid", "non-nucleic acid", "target sequence", "antibody", and "peptide nucleic acid" are also defined in the definitions section of the specification (pages 7-10). The terms "binding partner" and "molecular probe", being exemplified by well-known and understood compositions, provide the ordinary practitioner with sufficient information to understand that Applicant possesses and has adequately

described the present invention. The Examiner is reminded that what is well known in the art need not be recited in detail in the specification. Since the facts upon which this rejection relies are incorrect, it is believed that the rejection is improper and should be withdrawn.

At paragraph 3 of the Office Action the Examiner argues that Applicants have improperly attempted to incorporate by reference documents at pages 8, 11, 13, 14 and 17. (OA at pages 2-3 ) Assuming this to be true, and it is not, it is irrelevant to this issue since the cited documents were well-known to the ordinary practitioner at the time of the invention. For example, the 14 US patents cited at page 8 demonstrate that the ordinary practitioner knew much about what structure constitutes a PNA. Similarly, the reference to these very same patents at page 11, under the heading: "PNA Synthesis", illustrates that much was understood by the ordinary practitioner about the synthesis of PNA. Likewise, the reference to 29 different US patents at page 11 of the specification demonstrates that much was understood by the ordinary practitioner with respect to nucleic acid synthesis. The same can be said of the documents cited at pages 13 and 17. Remember, that which is well known in the art need not be recited in the specification for purposes of compliance with the written description requirement.

Regarding USSN 09/197,162 to which reference was made at page 14, the content of this application was published as WO99/21881 on May 6, 1999 making specific priority reference to USSN 09/197,162. Consequently, this information was also public and therefore imputed knowledge of the "ordinary practitioner" at the time of the invention.

In summary, whether or not the content of the various patents and patent applications was properly incorporated by reference is irrelevant to the analysis regarding compliance with the written description requirement since the full content of those documents were known to the ordinary practitioner at the time of the invention.

Finally, at paragraph 9 of the Office Action the Examiner quotes from the decision in *University of California v. Eli Lilly and Co.* (OA at page 8) It is respectfully submitted that the arguments are misleading. The full text of the paragraph quoted by the Examiner reads:

> *"As indicated, Example 6 provides the amino acid sequence of the human insulin A and B chains, but that disclosure also fails to describe the cDNA.* ***Recently, we held that a description which renders obvious a claimed invention is not sufficient to satisfy the written description requirement of that invention.*** *Lockwood, 107 F.3d at 1572, 41 U.S.P.Q.2D (BNA) at 1966. We had previously held that a claim to a specific DNA is not made obvious by mere knowledge of a desired protein sequence and methods for generating the DNA that encodes that protein. See, e.g., In re Deuel, 51 F.3d 1552, 1558, 34 U.S.P.Q.2D (BNA) 1210, 1215 (1995) ("A prior art disclosure of the amino acid sequence of a protein does not necessarily render particular DNA molecules encoding the protein obvious because the redundancy of the genetic code permits one to hypothesize an enormous number of DNA sequences coding for the protein."); In re Bell, 991 F.2d 781, 785, 26 U.S.P.Q.2D (BNA) 1529, 1532 (Fed. Cir. 1993). Thus, a fortiori, a description that does not render a claimed invention obvious does not sufficiently describe that invention for purposes of § 112, P 1. Because the '525 specification provides only a general method of producing [**22] human insulin cDNA and a description of the human insulin A and B chain amino acid sequences that cDNA encodes, it does not provide a written description of human insulin cDNA. Accordingly, the district court did not err in concluding that claim 5 is invalid for failure to provide an adequate written description." (Examiner quoted text in bold)*

In the cited case, the patents at issue related to recombinant DNA technology and specifically to plasmids and microorganisms that produce human insulin. Although the specification provided a written description of rat cDNA, it did not provide an adequate written description of human cDNA. Because of the redundancy of the genetic code, the information provided in the specification did not allow the ordinary practitioner to surmise the, then unknown, structure of human cDNA, needed to produce the human insulin.

In the present case, the terms "molecular probe" and "binding partner" are defined and exemplified by well-known compositions. Accordingly, the Examiner's reliance on the dicta of the decision in *University of California v. Eli Lilly and Co.* is misleading and irrelevant because no proper analogy can be drawn.

In summary, it is respectfully submitted that the specification complies with the written description requirement and that in any event the Examiner has not provided

any facts that demonstrate the contrary. Accordingly, it is respectfully submitted that the present rejection under 35 U.S.C. § 112, first paragraph should be withdrawn.

**2. Rejection under 35 U.S.C. § 112, enablement requirement**

*(a) The Law*

"The purpose of the requirement that the specification describe the invention in such terms that one skilled in the art can make and use the claimed invention is to ensure that the invention is communicated to the interested public in a meaningful way." M.P.E.P. § 2164 "However, to comply with 35 U.S.C.§ 112, first paragraph, it is not necessary to "enable one of ordinary skill in the art to make and use a perfected, commercially viable embodiment absent a claim to that effect."" *Id.* "Detailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention." *Id.*

"The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." M.P.E.P. § 2164.01 "The fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation." *Id.*

*(b) Analysis of The Examiner's Arguments In View Of The Law*

At paragraph 12 of the Office Action, the Examiner begins by arguing that Applicants don't possess the invention and therefore cannot have enabled the invention. (OA at page 9) As discussed above, this premise of this argument is without merit. Specifically, Applicant's specification demonstrates possession of the invention. It being based upon an incorrect premise, the conclusion of the Examiner's argument cannot be correct.

At paragraph 12, the Examiner then argues that: "... the specification does not provide the essential starting materials or reaction conditions that must be employed when practicing the claimed invention." (OA at page 9-10) This too is incorrect.

From the discussion set forth above regarding the written description requirement, it is clear that the specification provides an appropriate description of such claim elements as the "molecular probe" and the "binding partner". The Examiner's attention is further directed to Example 1 (beginning at page 35). In this example, it has been demonstrated that a commercially available coded bead comprising a linked Salmonella specific antibody was able to specifically capture the "stained" detectable *S. choleraesuis*. Accordingly, this Example demonstrates both possession of the invention and disproves the Examiner's contention that no specific starting materials or reaction conditions have been disclosed by Applicants. The factual basis of the asserted rejection having been disproved, the rejection should be withdrawn.

Regarding the Examiner's reference to "essential conditions", method claims 1, 18 and 35 contain the claim limitations for each method and the Examiner has failed to describe how any of the disclosed limitations are deficient. The Examiner is further directed to pages 16-17 wherein there is a discussion of such topics as: "Hybridization Conditions/Stringency", "Suitable Hybridization Conditions", "Suitable Antibody Binding Conditions" and "Harmonization Of Suitable Hybridization Conditions & Suitable Antibody Binding Conditions". Clearly these discussions are directions for the ordinary practitioner with respect to operating the methods of the invention. The Examiner is reminded that: 1) "The test of enablement is whether one reasonably skilled in the art could make or use the invention **from the disclosures in the patent** (emphasis added) coupled with information known in the art without undue experimentation." M.P.E.P. § 2164.01 and that: 2) "Detailed procedures for making and using the invention **may not be necessary** (emphasis added) if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention." M.P.E.P. § 2164. Accordingly, the Examiner's reference to "essential conditions" does not seem to be supported by the law. Clarification is requested.

Certainly the Examiner is not suggesting that the formation of complexes from binding partners such as antibody/antigen, nucleic/nucleic acid, nucleic acid/peptide nucleic acid, enzyme/substrate and receptor/ligand were not well understood and often used in the biological and chemical arts at the time of filing of the present application. Accordingly, very little if any specific instructions should be needed to

permit the ordinary practitioner to be successful in such activity and any experimentation to optimize reaction conditions would not be undue since the factors that affect such interactions were well known and understood.

At paragraph 13 of the Office Action, the Examiner takes statements made in the background of the specification out of context and thereby mischaracterizes the nature of that discussion. The relevant paragraph of the background section of the specification reads:

> *"Nucleic acid hybridization is a fundamental process in molecular biology. Probe-based assays are useful in the detection, quantitation and/or analysis of nucleic acids. Nucleic acid probes have long been used to analyze samples for the presence of nucleic acid from bacteria, fungi, virus or other organisms and are also useful in examining genetically-based disease states or clinical conditions of interest. Nonetheless, nucleic acid probe-based assays have been slow to achieve commercial success. This lack of commercial success is, at least partially, the result of* ***difficulties associated with specificity, sensitivity and/or reliability.***" (bold text quoted by the Examiner)

This quoted paragraph affirmatively states that nucleic acid hybridization is recognized as a fundamental process in molecular biology and that it has long been applied but that it possesses certain deficiencies that make it less than ideal for some commercial applications. Applicant's statement does not lead to the conclusion that nucleic acid hybridization is: "wrought with "difficulties associated with specificity, sensitivity, and/or reliability" in a general sense. It merely indicates that there is room for improvement that could lead to more specific, sensitive and reliable assays. The examiner is further reminded that: "...to comply with 35 U.S.C.§ 112, first paragraph, it is not necessary to "enable one of ordinary skill in the art to make and use a perfected, commercially viable embodiment absent a claim to that effect."" M.P.E.P. § 2164

Nevertheless, in the present invention, the examiner is correct that those very same nucleic acids are used as an embodiment of a molecular probe.[1] However, according to the claimed methods, a second level of discrimination is used to thereby compensate for such deficiencies. Accordingly, the Examiner's critic is irrelevant. It

[1] Since the Examiner has implicitly acknowledged that a nucleic acid can be a molecular probe, it is unclear how the Examiner came to the conclusion that: ""A review of the specification fails to find adequate written description of any molecular probe and binding partner that are to be used in the claimed invention." (OA at page 8)

seems that the Examiner has implicitly acknowledged that both nucleic acid and peptide nucleic acids are perfectly fine embodiments for operation of the disclosed methods (See Footnote 1 and Example 1) and the Examiner has not demonstrated otherwise.

In the final sentence of paragraph 13 of the Office Action the Examiner states: "Even if the claims were to be limited to PNA probes, the specification does not teach which probes are to be used, much less which probes are to be used in combination with various molecular probes so that every "species, taxon, subclass, subspecies, serotype, or strain" of the organisms can be identified." It seems that by this statement, the Examiner expects applicants to list every probe sequence that could ever be used to determine each specific organism to be determined. It suffices to say that no such requirement exists under the law. Such specific embodiments are user defined. This is clear because, "The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." M.P.E.P. § 2164.01 For example, as stated in the background:

> *"Nucleic acid hybridization is a fundamental process in molecular biology. Probe-based assays are useful in the detection, quantitation and/or analysis of nucleic acids. Nucleic acid probes have long been used to analyze samples for the presence of nucleic acid from bacteria, fungi, virus or other organisms and are also useful in examining genetically-based disease states or clinical conditions of interest."*

Since the Examiner has not contested this statement as being a proper representation that such activity is well-known and understood by the ordinary practitioner, it is clear that the production of suitable probes is well understood and need not be specifically described in the specification. Accordingly, there is simply no requirement under 35 U.S.C. 112, first paragraph that every conceivable sequence and related organism be expressly stated in the specification since the preparation of such probes is well understood and practiced.

In summary, the premises of the Examiner's arguments being incorrect, it is respectfully submitted that the rejection for lack of enablement under 35 U.S.C. § 112, first paragraph should properly be withdrawn.

## IV. SUMMARY

It is believed that this response addresses all rejections set forth in the present Office Action and the application is in ready condition for allowance. In consideration of the preceding remarks, Applicants hereby respectfully request reconsideration of all pending claims, the withdrawal of all rejections set forth in the present Office Action and the issue of a Notice of Allowance by The Office.

## V. INTERVIEW

If the Examiner believes a telephonic or personal interview would advance the prosecution of the subject application, the Examiner is invited to contact attorney Gildea during business hours at the telephone or facsimile numbers listed below.

## VI. FEES

The petition under 37 C.F.R. §1.136(a) that accompanies this paper includes an authorization to deduct the appropriate fee for a three-month extension from Deposit Account 02-3240. No additional fees are believed due The Office for consideration of this paper. If however, The Office determines that any other fee is due, authorization is hereby granted to charge any required fee associated with the filing or proper consideration of this paper to Deposit Account 02-3240.

## VII. CORRESPONDENCE/CUSTOMER NUMBER

Please send all correspondence pertaining to this document to:

Applied Biosystems
Attn: Brian D. Gildea, Esq.
35 Wiggins Ave
Bedford, MA 01730
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IF NOT ALREADY DONE, PLEASE MATCH THIS CASE WITH CUSTOMER NUMBER

**23544**

Respectfully submitted
on behalf of Applicants,

Jan 6, 2005
Date

Brian D. Gildea, Esq.
Reg. No. 39,995